

ABSTRACT

Chelating ligand precursors for the preparation of olefin metathesis catalysts are disclosed. The resulting catalysts are air stable monomeric species capable of promoting various metathesis reactions efficiently, which can be recovered from the reaction mixture and reused. Internal olefin compounds, specifically beta-substituted styrenes, are used as ligand precursors. Compared to terminal olefin compounds such as unsubstituted styrenes, the beta-substituted styrenes are easier and less costly to prepare, and more stable since they are less prone to spontaneous polymerization. Methods of preparing chelating-carbene metathesis catalysts without the use of CuCl are disclosed. This eliminates the need for CuCl by replacing it with organic acids, mineral acids, mild oxidants or even water, resulting in high yields of Hoveyda-type metathesis catalysts. The invention provides an efficient method for preparing chelating-carbene metathesis catalysts by reacting a suitable ruthenium complex in high concentrations of the ligand precursors followed by crystallization from an organic solvent.